

SHARED VOLATILE AND NON-VOLATILE MEMORY**Abstract**

The invention includes an apparatus and a method that provides a memory back-up system. The memory back-up system includes a first memory cell, and a non-volatile memory cell that is interfaced to the first memory cell. Control circuitry allows data to be written to either the first memory cell or the non-volatile memory cell, and provides transfer of the data from either the first memory cell or the non-volatile memory cell, to the other of either the first memory cell or the non-volatile memory cell. The memory back-up system can also include a plurality of first memory cells, and a plurality of non-volatile memory cells that are interfaced to the first memory cells. Control circuitry allows data to be written to either the first memory cells or the non-volatile memory cells, and that provides transfer of the data from either the first memory cells or the non-volatile memory cells, to the other of either the first memory cells or the non-volatile memory cells.